

Small and Medium Scale Enterprises (SMEs) as Agent of National Development in Sierra Leone

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Abstract: *This study, Small and Medium Enterprises (SMEs) as agent of national development was undertaken in Bo district. In all, 470 small and medium business enterprise owners were selected randomly and interviewed using questionnaires. Other methods of data collection were desk survey and observation; Data collected were analyzed using Statistical Package for Social Sciences (SPSS 16 and 23) applied on the data. A number of results, indices, frequency distributions, chi-square correlation, contingency tables, p-values, tests statistics etc., were generated with several interactions. The overall objective of this study is to identify the effect of SMEs as agents of national development and based on the findings make recommendations for the improvement of the performances of the business. The findings showed that most of the small and medium business owners were Sierra Leoneans (91.7%) and the rest were Guineans (8.2%) and Lebanese (8.2%). The majority of the respondents were in their productive age. Most of them were not educated; those educated had primary and/or secondary education. The respondents were fairly spread across a wide range of sectors, less than three-fourths of the sectors. (71.1%) in the economy, majority of them came from; Export 8(2.0%), services 187(38.9%), manufacturing 72(15.3%) and Trading 70(14.9%) and the others (28.4%). Management represents the greater of the problem, ranked (1) and occupied 3% of the sectors of the circle and 10.8% and the circle. More than three fifths of the respondents (68.0%) had formal education and the rest three-tenths of the respondents (32.0%) did not receive formal education. (64.0%) of business establishments from the study area are operating in retail trade. Less than three-fifth of the respondents 18(3.8%) out of 470 are public limited liability companies. 242 people are employed in the study area and more of them are in Kakwa chiefdom (60.0%). More than three-fifths of the small and medium enterprises specifically 315 (67.0%) out of 470 are private limited liability companies while 18 are public limited companies. Most of the respondents were sole owners of the business. The relationship between formal education and entrepreneurial success is surprisingly weak. Although not statistically significant, educational coefficient is negative (-87.97), perhaps that formal education and educational performance may be inversely related. The representative traditional peel brick oven bakery firm from the findings has the highest labour-capital ratio (17.0) and also the highest value added ration (4.5). The findings also reveal that only three of the five types of representative firms are even 'technically efficient'. The straight sewing plus expensive embroidery machine representative firm (type 4) as well as the machine renting firms (type 1) are technically inefficient, since they require both more capital and labour to produce a unit of output than does the firm type that engages in straight sewing (type 3). The Cobb – Douglass production function provides a reasonably good fit to the underlying data relating to the individual small and medium industries in Bo district. The C.E.S. formulation, however, has provided some interesting insights into the nature of the production relationships. The results derived from the C.E.S. production function not only support those derived from the Cobb-Douglass, but also provide evidence of the appropriateness of the Cobb-Douglass function itself.*

Keywords:

- **Traditional peel brick oven:** The baking chamber of the traditional oven is built of bricks or mud. Wood – firing sticks place directly on the hearth inside the baking chamber until the oven has acquired and stored sufficient Heat to complete the baking run.
- **SME:** - stands for Small and Medium size Enterprises
- **SLEIPA:** - Sierra Leone Exporting and Investment Promotion Agency
- **CES :** A constant elasticity of substitution (CES) production function, of which a Cobb – Douglas function is but one example, has an elasticity of substitution that is constant but not necessarily equal to 1.
- **Medium Enterprise** –A company with total cost including working capital but excluding cost of land of more than Le100, 000, 000 but less than Le 300, 000, 000 and/or a staff strength of between 71 and 200 full time workers and or with annual turnover of not more than Le20, 000, 000 only.

1. Introduction

Indeed, many developing countries began in the early 1950s to launch industrialization drives based generally on an import-substitution strategy, which usually resulted in the establishment of large-scale capital-intensive industries in urban areas.

Compared to other countries, Malaysian SMEs have contributed a creditable share as Germany recorded 57% share, Italy 36.7%, Taiwan 31.4%, Japan 20.3%, and Republic of Korea 16% (5). (International Journal of Trade, Economics and Finance, Vol.2, No.4, August 2011).

It contributes to a country's economic growth. Among the factors that motivate SMEs in entering overseas markets include market expansion, more profit and exposure to new ideas. On the other hand, barriers to internationalization among SMEs are shortage of capital, management characteristics and attitudes, lack of knowledge of potential markets and how to enter the markets, and also lack of qualified staff.

The high degree of poverty and unemployment with their attendant high crime rate in Sierra Leone has been of great concern to the various governments (provinces, districts,

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local) as well as the civil society. All and sundry have been seriously agitated as to what to do in order to reduce the crippling poverty, high level of ignorance, disease, high infant – mortality rate, and the rather embarrassing high unemployment rate in Sierra Leone . Given the vital and solitary role and contributions, which SMEs play in other developed and developing economies, and considering the on- going reforms by the government of Sierra Leone, which are primarily aimed at creating wealth, reducing poverty, generating employment, re-orienting values, and stimulating real economic growth, it becomes compelling for the SME sub- sector to be revamped, overhauled and energized towards playing its expected roles. The SMEs remain a veritable vehicle for such an expected complete turnaround in the economy of Sierra Leone.

In Malaysia, the term SMEs is often used interchangeably with small and medium scale industries „SME“ (Table 1). There were no common definition of MSMEs among the different Malaysian agencies and institutions and it is necessary to introduce standard definitions for SMEs since the definition used at that time mainly the manufacturing sector. Small and Medium Enterprise Corporation Malaysia (SCEcorp) underline 2 criteria that characterize the standard definitions of SMEs in Malaysia, which is the number of employees or annual sales turnover. These apply to four main sectors; primary agriculture, manufacturing (including agro-based), Manufacturing-Related Services (MRS) and Services (including information and communication technology). Table 1 shows the range of current SME definitions in Malaysia.

In the same vein, Balance (1984) used the size of business as the distinguishing features, as indicated by either asset value of turnover, or more commonly, by employment. He further revealed that, the upper limit in employment terms could, however, vary from 50 to 500.

Small-scale business was defined in a study carried out by the Government of Sierra Leone (1974) as an establishment employing less than 50 persons.

Statistics Sierra Leone , in collaboration with stakeholders such as the Bank of Sierra Leone, The National Social Security and Insurance Trust (N ASSIT), The National Revenue Authority (NRA), The Ministry of Trade and Ministry of Labour, decided to conduct a nationwide census of business establishments in the country during August and September, (2005) . From the above census, the employment size of establishments used to classify establishments into:

Petty enterprise----- 1 to 4 employees
Small Scale Establishment ----- 5to 19 employees
Medium Scale Establishment -----20 to 49 employees
Large Scale establishment-----50 and above employees.

Using this definition there were only 28 large establishments in Sierra Leone and those firms employed only 4111 individuals. (Chuta and Liedholm, 1985).

The above definitions show that there are no agreed figures in terms of numbers of employees to categorize business

enterprises into small, medium and large. The categorization varies from country to country and the researcher.

Many international Development Agencies, organizations, and financiers not only appreciate the great roles played by SMEs in poverty alleviation and overall economic development, but also invest a significant percentage of their resources in them (SMEs).A review of world Bank Operations revealed that it invested a whopping \$1.597 billion in SMEs in 2004 fiscal year, with Africa getting a sizeable share of over\$89 million. This sum was channelled through the four major development arms of the bank: the international Finance Corporation (IFC), the multilateral investment Guarantee Agency (MIGA), and the International Bank for Reconstruction and Development (IBRD), and the International Development Association (IDA). Nigeria, Kenya and Uganda benefited from part of the new joint pilot programme executed by IFC and IDA for SME development in 2004 to the tune of \$70million.

In recognition of the crucial roles played by SMEs with respect to economic growth and development, succeeding governments in Nigeria had various initiatives aimed at promoting the cause of SMEs in the country. The most tangible among the different incentive packages that varied with almost every change in government leadership was the focus on enhancing the financial opportunities for the SMEs. Some of the support institutions and opportunities created by the government of Sierra Leone to enable SMEs access funding in the past 30 years include:

- Credit guarantee Fund established in 1974
- Pilot SME job creation scheme;
- Sierra Leone Investment and Export promotion Agency in 2007;
- Sierra Leone business forum (IFC, 2010a)

The above well-intentioned institutions designed to provide succour to SME notwithstanding the sub-sector is yet to find its bearing in the murky waters of Sierra Leone’s business environment.

SMEs certainly play a major role in creating employment income and value added, accounting for up to ninety percent (90%) of manufacturing enterprises and between forty (40%) to eighty percent (80%) of manufacturing employment .*See Tables 2 & 3.*

A recent survey conducted by statistics Sierra Leone on industrial business establishments reveals that most of the businesses (81.9%) were established during the post war period (2000-2005).Also states that majority of business establishments (39.0%) are in the Western Area Urban District; this is followed by Bo with 12.0%, Kenema with 10.3%, Kono with 7.3 % and Bombali with 5.2%.

This means that 73.8% of business establishments in Sierra Leone are concentrated in Western Area Urban, Kenema, Bo, Kono and Bombali Districts; especially in the townships of Freetown, Bo, Kenema, Kono and Makeni.

From the constraints revealed so far of SMEs, it is only fair and proper to acknowledge the fact that the government did

not fold its arms to watch the SMEs wallow in the gamut of problems. Doubtless, the government fully appreciates the opportunities SMEs create for employment, their contributions to economic growth and development as well as the constraints and difficulties in their operating environment.

Professional groups and associations such as the various Chambers of Commerce and SLIEPA are vigorously pursuing, pushing and lobbying the governments for improved welfare and a better and more enabling operating environment.

At the international front, SMEs in Sierra Leone have better and much improved operational environment. The current thrust on commercialisation and privatisation of government-owned companies has also opened up new vista for SMEs and entrepreneurs. The effect of globalisation has also had salutary impact on the sub-sector. The liberalization of trade through WTO agreements has provided awareness through which SMEs could access international markets. The African Growth and Opportunities Act (AGOA), which favours and gives incentives to exporters from African countries to the United States of America represents another opportunity. Similarly, NEPAD has provided other growth opportunities for Sierra Leonean SMEs.

The intensified activities of the Sierra Leone Investment Export Promotion Agency (SLIEPA) and the Sierra Leonean underscore the government efforts in this direction. In November 2004, a high-powered trade delegation from Thailand's Department of Export Promotion was in Sierra Leone with a view to strengthening bilateral trade relationships between Sierra Leone and Thailand. Aside from meeting with some SME operators in Freetown, the delegation led by Charoon Lewechalermvong, a director in the department, also met with leaders of the National Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) and representatives of Freetown. The focus of the World Bank's IFC, which emphasizes on SMEs, has remained high in its priority. The same can be said for many other international agencies like the United Nations Industrial Development Organisation (UNIDO), the United Kingdom's Department for International Development (DFID), the United States Agency for International Development (USAID), and the World Bank's International Development Agency (IDA).

Recently (in February 2005), the Institute of Directors (IOD) president, Ms. Bennedikter Molokwu confirmed that the Blair Commission for Africa is to assist the SMEs in Sierra Leone by creating access to loans and a structure for on-lending through banks. She noted that it is a well-known fact that the African economy is government-driven while SMEs are the veritable engine of growth in developed economies.

Molokwu stated that SMEs are the largest employer of labour, providing livelihood for over 80 percent of the African work force especially women and the young. In 2005, President Olusegun Obasanjo charged the Central Bank of Nigeria (CBN) to ensure the realization of the primary objective of the Small and Medium Industries Equity Investment Scheme (SMIEIS), which is expected to

complement the development efforts of the financial institutions like the Bank of Industry (BOI), the Nigeria Agricultural Cooperative and Rural Development Bank (NACRDB), which provide a medium for long-term financial resources to enterprises in Nigeria.

In a paper titled "Developing Africa's SME Potential: How G8 can do more to help Africa" at a one-day workshop jointly organised by the African Business Roundtable (ABR) and the Tony Blair-driven Commission for Africa in Lagos recently, the Director-General of SMEDAN, Mrs. Modupe Adelaja pointed out that "an improvement in power supply, for example, would have more impact than a concessionary interest rate practise". She also sought support from the G8 for current attempts by stakeholders to streamline and simplify procedures for business registration and taxation at the three tiers of government adding that these would encourage SMEs to move from informal to formal status. She charged the developed countries of the world to support SME development initiatives on the African continent adding that translating the SME potentials in Africa to productive employment, income generation and wealth creation represent the greatest challenge confronting the continent's economy today.

Zuma, , head of the AUC (2013), also stressed that urbanization, a rising middle class, an enabling microeconomic environment, a rising gross domestic product, all are low hanging fruits that can nourish industrialization. It cannot be considered a luxury but necessity for the continent's development.

The limited success of industrial policy in Sierra Leone is clearly revealed from an examination of Sierra Leone's industrial statistics. From 1965/66 until 1970/71, for example, Sierra Leone's manufacturing sector grew at an annual real rate of only 2.8 percent. The sector thus grew even slower than the economy as a whole, which increased at an annual real rate of 3.7 percent during this same period. Moreover, even though the manufacturing output increased slightly during this period, the number employed in the „large-scale“ manufacturing sector actually decline at a 4.5 percent annual rate. (Chuta and Liedholm, 1985).

One of the first official indications that the Government was rethinking its industrialization strategy was provided in the 1974 Budget Speech of the Minister of Finance. As the Finance Minister stated, "our experience over the past ten or more years has shown that import substitution by itself is a limited and insufficient strategy of industrial development". In particular, he stressed that the policy resulted in a "failure to develop domestic raw materials sufficiently for local processing and export" and "discriminated against labour-intensive industries". Thus, he declared that, "it is only the promotion of industries based on our natural recourses, especially agricultural products that offer the greatest hope of achieving. The Government's main (industrial) objective" of providing "employment for our people" [Government of Sierra Leone, 1972], in particular small-scale industries, especially those in rural areas, were to play an important role in the new industrial strategy [Government of Sierra Leone, 1974].

Another example of a policy that discriminate against small-scale industry was the Government's decision to establish near Freetown an industrial estate in which the subsidized facilities were to be made available only to large scale industrial establishment.

Small and Medium Enterprises (SMEs) in Sierra Leone have not performed creditably well and hence have not played the expected vital and vibrant role in the economic growth and development of Sierra Leone. This situation has been of great concern to the government, citizenry, operators, practitioners and the organized private sector groups.

For any intervention aimed at improving the performance of small and Medium businesses to be meaningful therefore, the characteristics of this sector has to be known especially when such up-to-date information is lacking.

A review of World Bank Operations revealed that it invested a whopping \$1.597 billion in SMEs in 2004 fiscal year, with Africa getting a sizeable share of over \$89 million. This sum was channeled through the four major development arms of the bank: the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), the International Bank for Reconstruction and Development (IBRD), and the International Development Association (IDA). Nigeria, Kenya and Uganda benefited from part of the new joint pilot programmes executed by IFC and IDA for SME development in 2004 to the tune of \$70million.

Change (1994) describes industrial policies as governmental actions supporting the generation of production and technological capacity in industries considered strategic for national development. This definition implies an attempt by government to discriminate among activities, sectors and agents. It also implies that the discrimination is based on the belief that the favored activities, sectors and agents have greater potential than others to advance economic development.

Rodrik (2004), describes Industrial Policies as restructuring policies in favour of more dynamic activities.

These definitions manifestly underscore a long held view in development theory that some economic activities are inherently more supportive of qualitative structural transformation than others.

The governments (local) are neither relenting nor giving up in their bid to revamp and invigorate the fortunes of SMEs as to enable them play the expected role in Sierra Leone's economic growth and development. This is evidenced by the government's recent establishment of as well as the mandate given to the SLIEPA and the SIERRA Leone Chamber Of Commerce, the facilitation of the Community Banks and the government's drive and focus on realizing the objective of NEPAD, the government's endorsement and support of multilateral agencies and loans, and the government's backing of international development finance facilities. Other indications relate to the government's programmes aimed at poverty alleviation and proposed establishment of a Credit Guarantee Scheme for loans to SMEs, given the crucial role SMEs play in the industrial and economic

growth and development of developing countries like Sierra Leone.

On a related note, the government of Sierra Leone has been consistently making overtures to developed countries to come to invest in Sierra Leone. Efforts in this direction include personal visits by the President, trade missions, trade fairs, exhibitions and other promotional and showcasing activities.

In Indonesia, the contributions of SMEs to the Indonesian economy in terms of employment generation are significant (Mitsuhiro, 2003).

Harvie and Lee (2012) claimed that SMEs have played and are increasingly playing an important role in economic development. In Japan According to Iqbal and Urata (2002), SMEs have played a significant role in keeping their share of employment fairly stable during the bubble economy.

Chuta, et al, (1981) observed that the employment growth rate in this sub-sector was minimal for firms in the rural areas, which was explained by the higher attrition rates observed for these groups of firms.

Furthermore, Liedholm and Chuta (1985), revealed that the industrial sector i.e. those establishments that specifically engage in mining, construction, in Sierra Leone is much more extensive than had been previously recognized. The findings of this study revealed that in 1974 approximately 50, 000 industrial establishments employed almost 93, 000 workers. The government of Sierra Leone, on the other hand had established that only 52, 000 individuals would be employed in this sector in 1974. The survey also revealed that Rural and Urban small-scale industrial establishments dominated the industrial sector in terms of both the number of firms and total employments.

According to the ATLANTA Small-scale Survey Report (1991), the industrial development in Sierra Leone can be described as an activity of industrialization, which should emerge from the informal sector/household manufacturing that currently dominated the industrial sector. This report further showed that more than half of the industrial contribution to the Sierra Leonean Gross Domestic Product (GDP) emanates from the small-scale industrial enterprises of the informal sector.

From the foregoing, it can be seen that the small-scale business/enterprises are important as they create employment, income, promote economic growth and improve the general standard of living.

Factor demand and output supply functions formulated within the framework of the Cobb – Douglas profit function have been widely used for the study of technological and production behavior of small and Medium enterprises. Among others, Lau and Yotopoulos and Lin, and Sidhu and Baanante, (1986), made extensive use of the Cobb – Douglas type of profit function, estimates of output supply and factor demand have been derived for various uses.

The overall objective of this study is to identify the effect of SMEs as agents of national development. Management with a rank of one (1) representing the greatest problem occupies 3% of the sector of the circle and 10.8° of the circle, while Access to Finance/Capital with a rank of two (2) representing the second greatest problem area, has a sectoral area of 4% and 14.4°. The third greatest problem area, infrastructural problems, closely follows access to finance/capital with 4% in sectoral area and 14.4° of the Pie Chart circle.

2. Methods and Data Sources / Materials

2.1 Study Area

The study area in Sierra Leone is Bo District, Southern Region of Sierra Leone, with a population of 463, 668 (9.32%), (2004 population and housing census), and Chiefdoms that were studied are: (1) Njala Township in Komboya Chiefdom, (2) Bo Township in Kakua Chiefdom, (3) Baoma Township in Baoma chiefdom, (4) Bumpo Township in Bumpo Gawao Chiefdom, (5) Jimi Township in Bagbo Chiefdom, (6) Ngalehun Township in Badjia Chiefdom, (7) Tikonko Township in Tikonko Chiefdom, (8) Girahun Township in Baoma Chiefdom and (9) Yamandu Township in Baoma Chiefdom, (10) Nengbwema Township in Niawalenga Chiefdom, (Figure 1). Most of the members of these communities represent most of the tribes of Sierra Leone and some foreigners. The study area, being part of the Urban Rural areas, is the major areas of all commercial activities. This makes it a perfect field laboratory for assessing the important role Small and Medium enterprises play in the economic development of the country.

2.1.1 Sample Size and Selection

A preliminary survey was done to identify the various small economic businesses in the study areas. In all, 500 establishments were identified and recorded, and these formed the sample frame. Thus, a total establishment enumeration was undertaken in the chiefdoms of Bo, and it was used as a sample for the greater part of Bo District.

Simple random sampling technique method was used to select the sample. This was done thus: The names of these business owners were written on pieces of papers and folded. These were put into a bag and a child of eight years was asked to draw one at a time until the sample size was achieved. The bag was shaken each time a draw was made to ensure that each folded paper had a 50-50 chance of being selected and included in the sample.

In each of the localities and enumeration areas, the enumerators obtained information on the type of small and medium-scale business enterprise activities, the number of workers (including proprietors, hire apprentices and children), the type of workshop (temporary, permanent, etc.), the number and kind of machines used (whether power-driven or manually operated), method of producing goods and services and product types, banking and book-keeping practices, and profit reinvestments. Questionnaires were pre-coded and pre-tested before being utilized for the actual survey.

A total of 470 business owners were selected and included in the sample. In all, ten industrial establishments were selected: Agriculture, Mining, Manufacturing; Other communities social and personal services activities; Construction; Restaurant/hotel, Wholesale/Retail trade; Tailoring; Wool knitting; and Electrical gadget. These provided most of the information on which this work is based.

2.1.2 Data Collection Instruments and Techniques

The instruments and techniques used in the field survey were questionnaires, informal discussions, observations and desk research. The questionnaire used has two sections. The first section was on the general characteristics of entrepreneurs; and the second was to generate information on business/enterprise expansion (growth), the magnitude, composition and profit disbursement, sources of expansion (growth) funds for small and medium scale business enterprise, Constraints/problems of small and medium enterprises/industries and small and medium scale business enterprises proprietor who keep records. This questionnaire was administered to the respondents by the researcher at an agreed time with the respondents. Informal discussions were held with respondents to elicit information of general nature in relation to small and medium businesses, which would not have been captured by the use of questionnaires.

Observational method was employed to assess the nature and state of the small and medium businesses while a desk survey was also undertaken to review relevant literature in relation to small and medium businesses. In view of the budgetary and time limitations, however, it was not possible to undertake a complete enumeration of every industrial establishment in Bo District, southern region of Sierra Leone. Thus, it was necessary to devise a stratified sampling procedure to obtain an estimate of the establishment population, since previous empirical studies have revealed that both magnitude and composition of industrial activities varies with size of settlements, the stratification is based on locality size. These methods were used in combination to capture information, re-enforce each other and triangulate information for validity.

2.1.3 Data Analysis

The data collected was analyzed using economic and descriptive statistical techniques.

First, frequency counts were made to come up with raw scores and these were converted into percentages and presented in tabular form and graphs. Also calculated were measures of central tendency and dispersion, such as means, range and standard deviation.

In the literature on the performance of Small and Medium-Scale enterprises, some approaches have been proposed. The first is the neoclassical approach, which deals with the efficiency of the different Small and Medium-Scale enterprises and consequently the influence on their functioning in the marketplace. (e.g. Fulton & Gianakas, 2001; Notta & Vlachvei, 2007).

Comparison was made among firms to know whether scarce resources were utilized efficiently. This enabled us to use

both technical and economic efficiency techniques in analyzing the data.

2.1.4 Econometric Model

The above issues were investigated empirically. One assumes that these characteristics are independent of one another and influence economic profits – the dependent variable – in an additive manner; they were also investigated together by statistically estimating a single equation of the following form:

$$P_r = a + b_1Ed + b_2Ex + b_3Bk + b_4IC + b_5RP + \epsilon_i \dots\dots\dots (Eq5)$$

Where:

P_r - the return to the entrepreneur,

a - a constant,

Ed - a dummy variable which is equal to one if the entrepreneur possesses any formal education,

Ex - the age of the business,

Bk - a dummy variable which is equal to one of the entrepreneurs keeps even rudimentary books or accounts,

IC - the amount of initial capital of the firm at the time it was established.

RP - a dummy variable which is equal to one of the firm used only reinvested profits to finance its expansion and zero if it obtained funds outside the firm, and

Although the linear form of the equation has no more claims to validity than any other, it did provide a useful and convenient point from which to begin the analysis. The expected signs of the variables are shown in table 5.

2.1.5 Regression Model

Chi-square Test for Association between Variables

A research study on under-five mortality in Bangladesh done by Uddin, Hossain, and Ullah (2000), used contingency analysis to test significance association between dependent and independent variables by applying the Chi-square (χ^2) test in which $\chi^2 = \sum(O_{ij}/E_{ij}) - N$, follows a χ^2

distribution with $(r-1)(c-1)$ degrees of freedom. Also, SPSS (16) instruction manual support the use of Chi-square test to test the association between two variables by explaining that „A number of tests are available to determine if the relationship between two cross tabulated variables is significant. One of the more common tests is Chi-square. One of the advantages of chi-square is that it is appropriate for almost any kind of data“. On the other hand, in order to observe the effects of the independent variable (X_i) on the dependent variable (Y_i) linear regression analysis was used.

Where, O_{ij} = Observed frequency in the i th column and j th row of the table

E_{ij} = Expected frequency in the i th column and j th row of the table

N = Number of observations, r = number of rows, c = number of column

χ^2 = Notation sign for Chi-square statistic

Σ = Summation sign.

2.1.6 Linear Programming Framework

A linear programming framework is also used to analyze the extent of possible process substitution by firms. Thus, the present study attempted to determine if alternative activity (or process) rays can be constructed and analyzed for each of the most important rural industries in Bo District. The relevant input, output and technical data to be used in the analysis is generated from the detailed survey of the tailoring, carpentry, gara dyeing, baking, knitting, black smithing charcoal industries.

In addition to the linear programming analysis of production, there are also the various neoclassical formulations of the production function, formulations that can provide insights into individual production relationships in general and the factor substitution issue in particular.

The neoclassical production function most commonly subjected to empirical estimation has been the Cobb-Douglas production function. Since this function can be used to determine the return to scale, as well as the marginal product of the factors of production, it can provide useful insights into the nature of the industrial production relationship. Thus, the present study is the labour, capital and value added data collected during the survey to estimate the parameters of Cobb-Douglas functions for each rural industry. Unfortunately, however, the Cobb-Douglas functions, do not shed much light on the factor substitution issue, because one of its properties is that the elasticity of substitution (λ) is always equal to one.

Thus, it would also appear a desirable fit to use the more general Constant Elasticity of Substitution (CES) production function to these same industrial data. A key property of this function is that the elasticity of substitution (σ) can range from 0 to infinity, thus showing that both the Leontief fixed coefficient function, where $\sigma = 0$, and the Cobb-Douglas function, where $\sigma = 1$, are special cases of this more general function.

Although several alternative procedures exist for estimating the parameters of these functions, the following formulation appeared to yield the greatest insights for the purpose of this study:

$$\log L = a + b \log Q - c \log \left(\frac{W}{P} \right) \dots\dots\dots (Eq6)$$

Where:

L - is labour, a , is a constant,

Q - is value added and

W/P - is the real wage in the rural industry.

The estimated parameters, b and c , provide valuable insights into the determinants of the demand for labour. The coefficient, c is a measure of the elasticity of substitution (σ)

and thus reveals the degree to which factors can be substituted for one another in production.

Moreover, as Minasian (1961) has noted $(-\sigma)$, or $-c$, is the real wage elasticity of demand when output is held constant; thus, it indicates the percentage change in the demand for labour from a given percentage change in real wages. The coefficient b , on the other hand, is the elasticity of employment demand with respect to output when real wages are held constant; thus, these parameters measure the percentage change in demand of labour arising from a given percentage change in output.

The parameters of this production function, as well as the other functions, were estimated with ordinary least squares techniques using the data generated during the survey.

3. Results and Discussion

The responses of the 470 participants to the 94 questions were keyed into the system and the statistical package for social sciences (SPSS 16 and 23) applied on the data.

As expected, almost an uncountable number of results, indices, frequency distributions, chi-square correlation, contingency tables, p-values, tests statistics etc were generated with several interactions.

Top on the list of information and data generated were frequency tables numbering about twenty (20) representing the distribution of responses to each of the questions and sub-questions. Key among these frequency distribution tables is the distribution of industrial establishments and employment in Bo District of the various small and medium industries/enterprises in the study area – Bo District.

From the findings, Kakua employs 60.3% of the population in the study area followed by Njala Komboya (11.6%), Niawalenga (11.6%), Badjia (1.7%) and Baoma (0.8%).

The composition of industries, varied importantly with the size and location of settlements in Bo district.

The results not only reflect the analysis of industry, but also provide support for distinguishing between „rural“ and „urban“ small medium scale industries.

These results thus reflect the importance of rural industries and the need to include these enterprises in studies of the industrial sector of Sierra Leone. Moreover, these results also point to the need to ensure that rural industries are incorporated into industrial studies in developing countries.

The major sectors in the economy were represented in figure 2.

The tabular representation and interpretation of the Pie Chart clearly depicts the relative gravities of the problem areas. Management with a rank of one (1) representing the greatest problem occupies 3% of the sector of the circle and 10.8° of the circle, while Access to Finance/Capital with a rank of two (2) representing the second greatest problem area, has a sectoral area of 4% and 14.4°. The third greatest problem area, infrastructural problems, closely follows access to

finance/capital with 4% in sectoral area and 14.4° figure 3 of the pie chart.

The rankings from figure 3, show that the problems facing SMEs in Bo district in this increasing order of gravity (starting with the least rank) are: Non-availability of raw materials locally, Marketing problems, Unfair competition, Access to Modern technology, Multiple Taxes and Levies, Environmental Factor, Government Policy Inconsistencies and Bureaucracy, Infrastructural problems, Access to finance/capital and management problems.

3.1.1 Link test for Model Specification Error

Gujarati D.N & Porter D.C (2009) made assumption that the “Regression model used in the analysis is “correctly” specified, but if the model is not “correctly” specified, we encounter the problem of model specification error or model specification bias”.

After conducting a linear regression we did a link test, we found that the probability $(P>|t|)$ of $_hatsq$ is 0.955 as indicated is equivalent to 95.5% which is good for model specification error. This implies that the model was well specified (modelled) since the probability of $_hatsq$ is as large as possible (Approaching to one).

3.1.2 Linear Model Regression Result

The result of regression analysis of the equation based on a sample of those 470 small and medium enterprises/industries that possessed the required profit and entrepreneurial characteristics was as follows:

$$\text{Pr} = 174.191 - 87.969\text{ED} + 3.115\text{Ex} + 1,384\text{BK} + 0.125\text{IC} + 3,215\text{RP} \\ (2.708) \quad (2.84) \quad (11.1) \quad (645) \quad (0.54) \\ (364) \\ R^2 - .61, \text{Sig. } P < .01$$

The standard errors for the individual coefficients are listed in the parenthesis; the adjusted R^2 for the equation is 0.30 from a cross-section analysis above the results indicate that the equation has provided a reasonably good estimate of the underlying entrepreneurial characteristics that affect the economic returns to the entrepreneur.

The relationship between formal education and entrepreneurial success is surprisingly weak. Although not statistically significant, educational coefficient is negative (-87.97), perhaps that formal education and educational performance may be inversely related.

Similar results have been reported for the Nigerian bread industry and for a cross-section of Nigerian industry. There are, however, various explanations for this weak relationship between entrepreneurial success and formal education. Non-formal education is not merely a substitute for formal education but may, in some cases, provide better training for the entrepreneur. In addition, the more formally educated entrepreneurs may undertake several different business activities, thus their effectiveness in any one may be diminished.

Finally, formal education and basic ability may be inversely correlated in small and medium industry. This would occur if the good students with formal education were generally offered permanent jobs in government and large-scale industry, leaving as Haris Points out, „only the bottom of the class to enter entrepreneurial careers, while the bright and energetic individuals without formal education turn to businesses as the best available alternative“.

The years of experience of the entrepreneur on the other hand, do appear to have an important bearing on the entrepreneurial success. The „years in business“ coefficient is positive and significant at the 5 percent level. The „education“ gained while operating the firm would thus appear to be more important determinant of entrepreneurial success than the education gained in a more formal setting.

Entrepreneurs who keep even some rudimentary form of records or accounts appear to be more successful than their counterparts who do not. The „record-keeping“ coefficient is not only positive but significant at the 1 percent level. This result indicates that technical training on how to keep and use financial records as a tool of management may be one effective method of assisting and increasing the economic viability of small and medium industrial enterprises in Bo district.

The results of the analysis also reveal that those firms with access to larger amounts of initial capital were not necessarily any more successful than those commencing business with smaller amounts. Although the „initial capital“ coefficient was positive, it was not statistically significant. The generally low initial capital requirements, simple technology and the general lack of economies of large-scale production involved in small and medium industry make it possible for a firm to enter on a rather small and medium scale and compete quite successfully with the larger firms.

Moreover, the lack of success external sources of capital for expansion does not appear to have had an adverse effect on the economic profitability of the firms in the sample. The „reinvested profits“ coefficient was positive and significant at the 5 percent level, indicating that the entrepreneurs that expanded by using reinvested profits were generally even more successful than those entrepreneurs with access to external sources of capital.

Although these results are certainly not conclusive, they do cost some doubt on the contention that lack of capital is the principal barrier to the success of small and medium scale industry in Bo district.

Specifically, years of experiences and the keeping records are two characteristics that appear to be positively associated with economic profits. On the other hand, formal education; initial capital level and access to the capital market do not seem to be strongly associated with the level of economic profits and thus may not be serious barriers to an expansion of entrepreneurship. These results may however provide some initial guide to the kinds of policies that might be applied to encourage on expansion in both the supply of entrepreneurs and small and medium scale industries.

Table 7 shows the pattern of resource use and profitability of bakery firms in Bo district. In all, six representative firms have been discussed in detail. The criteria for classifying the bread-baking firms into firm types are the observed technologies of bread-baking in Bo district.

The table above shows, the representative traditional peel brick oven bakery firm has the highest labour-capital ratio (17.0) and also the highest value added ration (4.5). Thus, compared to the rest of the firm types, the traditional oven bakery employs more of abundant labour and generates more value-added per unit of scarce capital respectively. The Traditional bakery firm type is followed by the rotary peel oven type which has a labour-capital ratio and a value-added-capital ratio of 0.75 and 8.35 respectively.

The findings also examine whether the pattern of resource utilization indicates the efficient performance on the part of the traditional labour-intensive technology.

The above table also presents, in parenthesis, the reciprocals of the factor proportions shown in the first and second columns. The reciprocals show low much capital and labour are required to produce one unit of value-added. The table thus shows that the tunnel oven and multiple desk ovens are both technically inefficient. Whereas the tunnel oven uses the same amount of labour and more capital than the reel bakery to produce one unit of value-added.

Salient implications in bakery findings are that, the traditional technology, which is the most labour intensive, may not be making an optional use of abundant labour and scarce capital. In Bo district bakery, the technology which optimizes on resource use seems to be an outdated Western Technologies which lies in between traditional and modern/semi-modern technologies. This optimal intermediate technology combines the advantages of high-quality bread and considerable turnover of the modern bakery with much less capital intensity.

Although our economic analysis shows the outdated rotary peel oven technology to yield the highest rate of economic profitability, it should be pointed out that the extended use of such a technology today would face a number of constraints. Such obsolete equipment may not be found even in today’s used equipment markets. Even if this type of equipment were to be produced in advance countries, the cost of production would be close to the current prices of semi-modern multiple desk ovens. This is because the technology of incorporating the rotary system and water tubes remains intricate and sophisticated. If on the other hand such ovens were produced in less developed countries, an extra cost element could arise due to the scarcity of raw materials needed to build such iron ovens and the importation of the skills needed to produce prototypes even on a pilot project basis. On the whole, the production of such a wood-fining metal oven may not be technically or economically feasible. The tunnel oven likewise cannot be considered an appropriate technology for use, even in Bo owing to its large capacity and high energy costs. The result of a recent survey in Sierra Leone shows that, due to the high cost of electrical and oil energy, some modern bakeries have already reverted to the use of brick ovens.

The table 7 shows the Distribution of Sample Respondents by Technical or Economic Efficiency of Small and Medium Tailoring or Clothing Industry in Bo District.

In order to examine the efficiency of the major production techniques utilized by the different Tailoring or Clothing firms in Bo district, data obtained from 470 small and medium tailoring or clothing firms included in the sample have been grouped into five representative types as shown in Table 7.

Machine – renting firms, the first type, constitute about 2 percent tailoring firms in Bo district – There is no organized market for renting sewing machines; a few relatively wealthy business men, landlords, or farmers do occasionally rent sewing machines for sewing and/or repairing clothes. These firms, which constitute the bulk of small and medium Tailoring (clothing) firms in Bo district (4.9 percent), do not have the facility for adding embroidery on sewn fabric. The third and fourth groups constitute 3 percent and 0.8 percent of small and medium Tailoring (clothing) in Bo district respectively. Although each of these does straight sewing and embroidery work, the latter type is the large-scale capital-intensive firm of which only one existed in Bo, Kakua chieftdom during the study period. Table 7 reveals that the adjusted R^2 values (except for carpentry) are reasonably high for a cross-section study and the coefficients are generally statistically significant. It appears that COBB – Douglass provides a reasonably good fit to the underlying data relating to the individual small and medium industries in Bo district.

The production function analysis reveals that there is no empirical evidence of the existence of any increasing return to scale in the industrial categories examined. Only in the Gara dyeing industry did the sum of the labour and capital coefficients even slightly exceed one (1.06) and, in this case, an analysis of variance test indicated that the sum of the coefficients was not statistically different than one.

Indeed, Gara dyeing, as well as tailoring, black smithing and baking were found to be subject to constant returns to scale during this period. Thus, large-firms in these industries possessed no production advantage over the smaller firms.

Another important result evident from the analysis is the indication that the estimated coefficient (α) for the three labour groups did appear to vary importantly by industry and by labour group. In particular, the estimated proprietors' elasticity coefficients (α_p) were significantly higher than those for apprentices (α_A) and hired workers (α_H), at least in those industries with statistically significant coefficients.

The data in the Table 8 show the maximum likelihood regression results for the major small and medium scale industrial groups. When compared with the Cobb-Douglass results in Table 33, the C.E.S. function did not appear to have yielded a superior representation of the data. The carpentry parameters continue to be insignificant and, except for Gara dyeing, the R^2 and coefficient Standard error were not measurably better for the C.E.S. than for the Cobb-Douglass function.

From the table above, the C.E.S. formulation, however, has provided some interesting insights into the nature of the production relationships. Firstly, none of the substitution parameters were significantly different from one and the Cobb-Douglass functioned form can be accepted as appropriately describing the data.

Moreover, none of the returns to scale parameters were significantly different from one, thus indicating once again the apparent lack of economies of large-scale production in these particular Bo District industries. The results derived from the C.E.S. production function not only support those derived from the Cobb-Douglass, but also provide evidence of the appropriateness of the Cobb-Douglass function itself.

4. Conclusion and Recommendations

4.1 General Conclusions

Given the objectives of the study, vis a vis the findings, several conclusions may be drawn the most salient of which are the following.

- The problem areas facing SMEs generally in the study area in descending order of intensity include management problems, access to finance/capital, infrastructure, government policy inconsistency and bureaucracy, environmental factors related problems, multiple taxes and levies, access to modern technology, unfair competition, marketing problems and then on-availability of raw materials locally.
- The mortality rate among SMEs in the study area is very high within their first five years of existence. The reasons for the high mortality rate include the following among others: Many prospective entrepreneurs do not have a clear vision and mission of what they intend to do. Many of the SMEs are not business specific and hence have no focus and are easily blown away by the wind.
- They tend to emulate or copy other successful SMEs without any planning of their own. Many fail to plan well and waste a lot of resources on brochures and other non-essentials as a result of no focused and logical procedure or articulated plan of actions. Other mistakes by start up SMEs include placing advertisements without quality and commensurate goods and services to match, promoting themselves (promoters) instead of the business per se, promoting the business in the wrong environment, quitting at experiencing a slight setback or disappointment, not researching the market well ahead of commencement, not being original and stopping marketing too soon.
- The rate of growth of SMEs in Sierra Leone is stunted due to the following key reasons: lack of entrepreneurial spirit and drive, fear of failure of the enterprise, fear of starvation for a few months after quitting a paid job, inability to produce or pay for a feasibility study or business plan, mindset that "it will not work" or "I won't succeed" and the likes.
- Capacity building especially in terms of business knowledge, self confidence, skills and attitude, acquisition and development of entrepreneurial spirit and right business motivation and ability to set goals are imperatives for entrepreneurial success.

5. Recommendations

In view of the strong economic justification for small and medium scale industries as agents of national development, the following recommendations are meant to serve as guide for the improvement of the small and medium industrial sector with particular reference to the study area.

1. It is necessary for the government to create an enabling environment that is appreciably devoid of corruption and bureaucracy and at the same time, motivating and entrepreneur ally friendly.
2. The provision of capital or credit is one of the most commonly utilized methods of directly affecting small and medium industries. The empirical methods and analytical findings of the study indicate, however, that capital may not be necessarily the over-riding constraint facing small and medium in the study area .
3. Because of the high rates of business failures within two or three years of a firm's establishment, project designers must be more cautious in selecting firms for long term financial assistance. They might want to select, for example, only firms that have been in existence for two years or more.
4. For the government to succeed in reinventing the future of SMEs, it has to extend the current reforms to our educational system to make it more functional, relevant and need-oriented and driven. The thrust and emphasis should be on modern technology, practical technological and entrepreneurial studies aimed at producing entrepreneurs.
5. The transformation of our educational system has to start from primary through secondary and tertiary emphasizing the cultural reorientation and focus on technological studies through all the stages.

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